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Vascular Medicine

DECLINED VISUAL ACUITY IS ASSOCIATED WITH VASCULAR DYSFUNCTION IN PATIENTS WITH DIABETES MELLITUS

Poster Contributions
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Background: Diabetic Retinopathy (DR) leads to deterioration of vision. Endothelial function and arterial stiffness are key players in the pathophysiology of atherosclerotic disease. We investigated the possible association of vascular function with visual acuity in subjects with diabetes mellitus.

Methods: We enrolled 100 consecutive subjects with diabetes mellitus. Patients were divided in those with DR (53 subjects, mean age 68±9) and those with no evidence of DR (NDR) (mean age 66±6). Best-corrected visual acuity (BCVA) was measured in both eyes. A BCVA less than 0.8 was considered as severely impaired. Endothelial function was evaluated by flow mediated dilation (FMD) in the brachial artery and arterial stiffness was evaluated by carotid femoral pulse wave velocity (PWV).

Results: Although there were no significant differences in baseline characteristics, patients with DR compared to NDR patients had impaired FMD (3.42±1.08% vs. 5.39±1.47%, p<0.001), impaired PWV (11.10±3.11m/sec vs. 9.02±2.13m/sec, p=0.001) and worse BCVA (p<0.001). Moreover in diabetes mellitus subjects, BCVA was positively correlated with FMD, creatinine clearance, and inversely correlated with PWV, glycosylated hemoglobin levels, C- reactive protein levels, age and with duration of diabetes mellitus (p<0.01 for all). Interestingly, after adjustment for age, gender, smoking habits and the aforementioned confounders, FMD was independently associated with BCVA (p<0.001). Moreover, ROC curve analysis revealed that both impaired FMD (AUC=0.79, p<0.001) and PWV (AUC=0.8, p<0.001) have a significant diagnostic ability in detecting diabetic subjects with severely impaired BCVA. More precisely, FMD less than 4.5% has a sensitivity of 90% and a specificity of 60%, while PWV over 10.0 m/sec has a sensitivity of 83% and a specificity of 68%, for the diagnosis of severely impaired BCVA.

Conclusion: Patients with DR have significantly impaired vascular function and visual acuity. Moreover, both endothelial function and arterial stiffness were sensitive predictors of visual impairment highlighting their potential role on the prevention and management of the complications in diabetes mellitus.